

Bellwork: 2/11/13

Graph the following polynomial function:

$$y = -(x-1)(x-3)(x+2)(x+1)$$

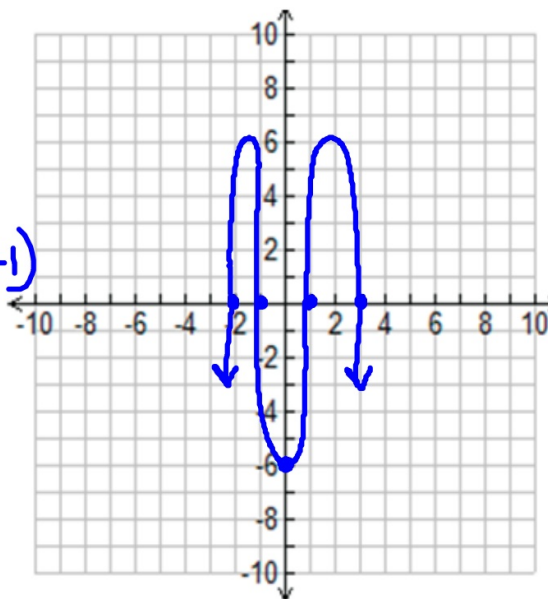
$$x-1=0$$

roots: $x = 1, 3, -2, -1$

yint: $-(0-1)(0-3)(0+2)(0+1)$

$$(0, -6)$$

EB: even $\ominus -x^4$



Page 1

Graphing Polynomials in Standard Form:

1) $y = x^3 - 2x^2 - 15x$

NEW Step 1: Factor the equation

$$x(x^2 - 2x - 15)$$

$$x(x-5)(x+3)$$

Step 2: Find the zeros

$$x=0 \quad x-5=0 \quad x+3=0$$

$$x = 0, 5, -3$$

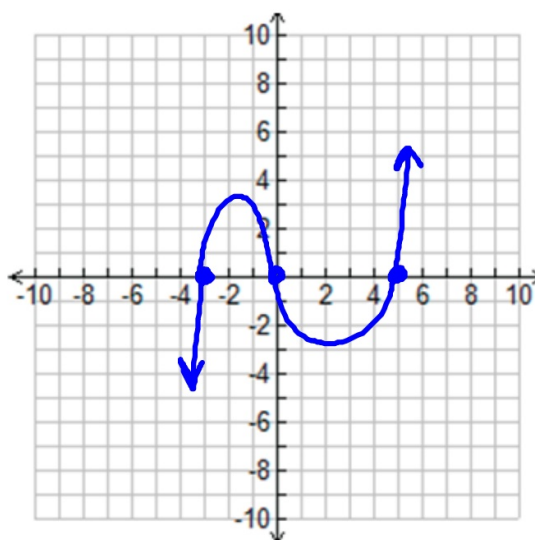
Step 3: Find y-intercept ($x=0$)

$$(0)^3 - 2(0)^2 - 15(0)$$

$$(0, 0)$$

Step 4: Determine end behavior

$$x^3 \text{ odd } \oplus \downarrow \uparrow$$



Page 2

$$2) y = 3x^3 - 3x^2 - 36x$$

$$3x(x^2 - x - 12)$$

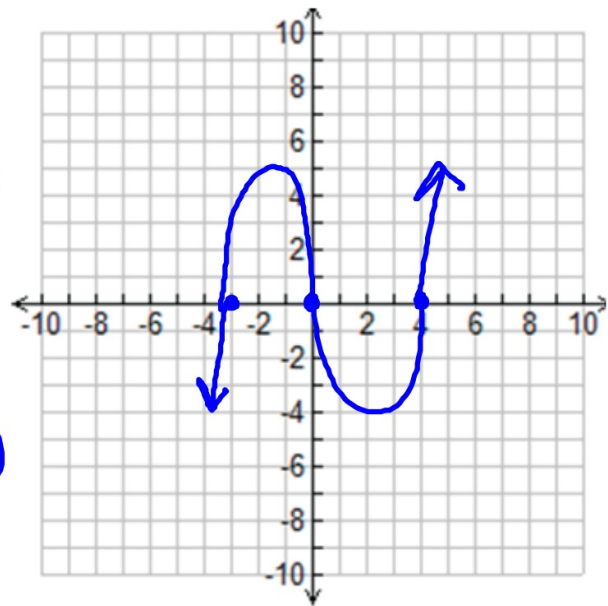
$$3x(x-4)(x+3)$$

$$\begin{array}{ccc} 3x=0 & x-4=0 & x+3=0 \\ \frac{3x}{3} & x=4 & x=-3 \end{array}$$

roots/zeros: $x = 0, 4, -3$

y-int: $3(0)^3 - 3(0)^2 - 36(0)$
 $(0, 0)$

EB: odd \oplus $\downarrow \uparrow$



$$3) y = -x^3 - 2x^2 + 15x$$

$$-x(x^2 + 2x - 15)$$

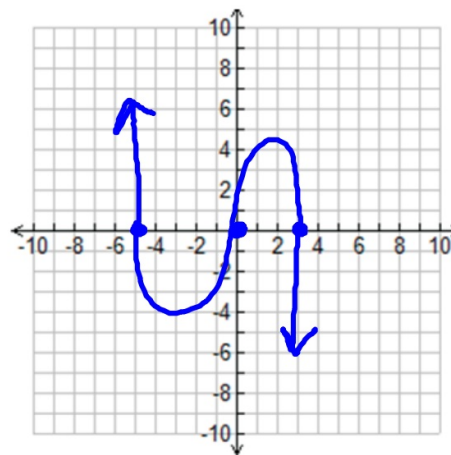
$$-x(x+5)(x-3)$$

$$\begin{array}{ccc} -x=0 & x+5=0 & x-3=0 \end{array}$$

roots: $x = 0, -5, 3$

y-int: $-(0)^3 - 2(0)^2 + 15(0)$
 $(0, 0)$

EB: odd \ominus $\uparrow \downarrow$



4) $y = 2x^3 - 5x^2 - 3x$

$$x(2x^2 - 5x - 3) \quad -6$$

$$(2x^2 - 6x + 1x - 3)$$

$$2x(x-3) + 1(x-3)$$

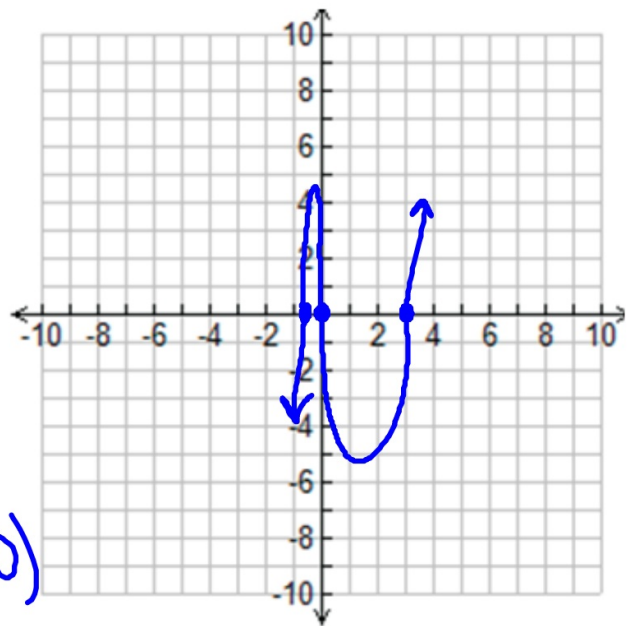
$$x(2x+1)(x-3)$$

$x=0 \quad 2x+1=0 \quad x-3=0$

roots: $x=0, 3, -\frac{1}{2}$

yint: $2(0)^3 - 5(0)^2 - 3(0)$
 $(0,0)$

EB: odd $\oplus \downarrow \uparrow$



5) $y = -x^3 + 16x$

$$-x(x^2 - 16)$$

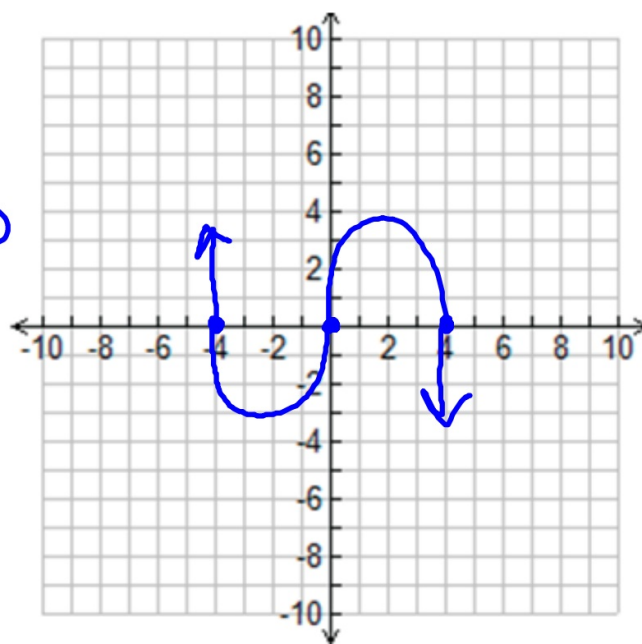
$$-x(x+4)(x-4)$$

$-x=0 \quad x+4=0 \quad x-4=0$

zeros: $0, -4, 4$

yint: $-(0)^3 + 16(0)$
 $(0,0)$

EB: odd \ominus
 $\uparrow \downarrow$



Homework: pg 293 #7-12 all - must graph

skip 11

